

REMARKS/ARGUMENTS

In a supplemental response to the Office Action dated June 16, 2005, entry of the previously-submitted Amendment A mailed September 29, 2005 as well as the following remarks is respectfully requested. Claims 1-2, 4-24, and 26-56 are pending for prosecution with Claims 1, 13, 24, 31, 40, 42, 53, 54, and 55 being independent.

I. The § 102(a) Rejection

Claims 1, 2, 7 and 24, stand rejected under 35 USC 102(a) as being anticipated by U.S. Publication No. 2003/0122285 A1 to Crane et al.. For the following reasons as well as those given in Amendment A mailed September 29, 2005, Applicant respectfully requests reconsideration and withdrawal of this rejection.

Crane does not anticipate the present invention because Crane fails to disclose each and every element of the invention as claimed. Crane teaches a soft tool for use in a closed mold for molding resin-infused fiberglass parts. In particular, Crane teaches a soft tool that includes a sheet having an outer edge, a seal formed at the outer edge configured for sealing engagement with a base mold, a vacuum channel formed at the outer edge and spaced inwardly of the seal and at least one injection port disposed in the sheet. However, Crane fails to teach a flexible body structure having one or more integrally-formed distribution channels for the distribution of resin and vacuum that extend across the structure's interfacing surface as claimed in independent Claims 1 and 24. Rather, Crane uses vacuum conduits and injection ports to infuse resin through the filler material contained within the base mold. Crane's vacuum conduits are positioned at the edge of the soft tool sheet and corresponding vacuum channels are disposed near the outer edge of the sheet. Crane's injection ports are inwardly disposed from the vacuum ports. There is no disclosure whatsoever of distribution channels for distributing both resin and vacuum that extend

across the interfacing surface of the sheet. Without the distribution channels extending across the sheet's interfacing surface, Crane cannot generate a vacuum for the perimeter seal or seals and a separate vacuum for the interior portions of the soft tool thereby allowing for different vacuum levels in the perimeter seal and the interior portions. Crane's single vacuum level can only be applied to the entire system. Thus, Crane does not have the capability to affect that portion of the B mold that is actually in contact with the fiber load without affecting the perimeter seal.

Because Crane fails to disclose every limitation of independent Claims 1 and 24, it does not anticipate these claims and the claims depending therefrom and cannot therefore be used to support a rejection under § 102(a). Accordingly, Applicant respectfully requests withdrawal of this rejection.

II. The § 103 Rejection

Claims 3-6, 8-23 and 25-40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Crane et al. in view of U.S. Patent No. 5,702,663 to Seemann. For the following reasons as well as those given in Amendment A mailed September 29, 2005, Applicant respectfully requests reconsideration and withdrawal of this rejection.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claim combination and the reasonable

expectation of success must both be found in the prior art, and not based on applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Crane does not teach or suggest the claimed invention. As discussed above in connection with the § 102(a) rejection of Applicant's claims, Crane does not teach or suggest a flexible body structure or unitary body having integral distribution channels for distributing resin and vacuum wherein the channels extend across the body's interfacing surface as claimed in Independent Claim 31 and 40. Crane teaches vacuum conduits positioned at the edge of the sheet and corresponding vacuum channels disposed near the outer edge of the sheet. However, Crane does not teach or suggest that the distribution channels for distributing vacuum are formed upon the interfacing surface of the sheet as claimed by Applicant. Without the distribution channels extending across the sheet's interfacing surface, Crane cannot generate a vacuum for the perimeter seal or seals and a separate vacuum for the interior portions of the soft tool thereby allowing for different vacuum levels in the perimeter seal and the interior portions. Crane's single vacuum level can only be applied to the entire system. Thus, Crane does not have the capability to affect that portion of the B mold that is actually in contact with the fiber load without affecting the perimeter seal.

Further, it is asserted in the Office Action that Crane's Claim 1 further teaches a molding process including ". . . drawing a vacuum and flowing resin through said plurality of resin distribution channels to impregnate said fiber-reinforced preform and form a fiber composition component." Applicant respectfully traverses this assertion. There is no mention whatsoever in Claim 1 or any other of Crane's claims of a plurality of resin distribution channels. The Office Action then reverses itself and states that although Crane et al "teach a resin port, a vacuum port and multiple vacuum distribution channels, Crane . . . do[es] not teach flowing resin through

multiple resin channels.” Thus, Applicant respectfully submits that the Office Action itself supports the conclusion that Crane does not teach or suggest resin distribution channels. Moreover, because Crane does not have resin distribution channels or vacuum distribution channels on the interfacing surface of the flexible body structure, Crane cannot reverse the direction of flow by switching the resin and vacuum distribution systems. Thus, Crane does not teach or suggest each and every element of independent Claims 31 and 40 and the claims depending therefrom.

Similarly, Seemann also fails to teach or suggest the claimed invention. Seemann teaches a conventional vacuum bag for forming of a fiber-reinforced composite article having optional vacuum conduits molded into the periphery of the vacuum bag and a resin distribution conduit sealed into the vacuum bag. This type of closed molding technique is discussed at paragraph 0005 of Applicant’s specification. However, Seemann does not teach or suggest a flexible body structure having an interfacing surface upon which one or more distribution channels for distributing resin and vacuum and are formed and extend thereacross. Like Crane, the Seemann vacuum conduits are located at the periphery of the vacuum bag rather than being formed upon and extending across the interfacing surface. Seemann also cannot generate a vacuum for the perimeter seal or seals and a separate vacuum for the interior portions of the soft tool thereby allowing for different vacuum levels in the perimeter seal and the interior portions. Seemann’s single vacuum level can only be applied to the entire system. Thus, like Crane, Seemann does not have the capability to affect that portion of the B mold that is actually in contact with the fiber load without affecting the perimeter seal. Accordingly, Seemann does not teach or suggest all of the elements of independent Claims 31 and 40 and the claims depending therefrom.

Independent Claim 13 recites a mold component comprising a flexible unitary body structure formed by spraying a material selected from the group consisting of polyurea, polyurethane, and polyurea/polyurethane on a pattern. Spray-forming allows the flexible body structure to more closely approximate the shape of the base or “A” mold. There is no teaching or suggestion by Crane to spray-form Crane’s “soft tool.” Rather, the “soft tool” sheet is pre-formed and then placed over the base mold. Similarly, there is no teaching or suggestion by Seemann to spray-form Seemann’s “vacuum bag.” Rather, Seemann’s vacuum bag is formed by repeated applications of an elastomer with good brushability. Moreover, at Column 8, line 8, Seemann discloses the use of polyurethane rubber in the “bag” of the invention can be made from a pre-formed sheet that is laid across the mask and then formed by vacuum or external pressure into the shape of the desired B tool. The sheet is then cured by the application of temperature cycling or exposure to a curing agent. This is a common practice with silicones, but Applicant respectfully submits that such a procedure does not work with polyurethane. Polyurethanes exist as a liquid or a cured sheet of material but there is no in-between state. It is well known in the art that polyurethane cannot be formed into an uncured sheet that is later cured by either heat-cycling or introduction of a curing agent. Applicant therefore respectfully submits that those skilled in the art would know that the Seemann disclosure cannot be used to support an obviousness rejection of Applicant’s independent Claim 13 and the claims depending therefrom.

Prima facie obviousness requires that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. No such suggestion or motivation exists in either Crane or Seemann to provide flexible body structures with both resin and vacuum distributions extending across the interfacing surface or spray-formed body

structures. Moreover, there is no expectation of success when Crane and Seemann are combined in that their combination would not result in a working mold tool similar to that of Applicant. Finally, the prior art references, when combined, must teach or suggest all the claim limitations. As discussed above, neither of the cited references teach or suggest all of the elements of Applicant's independent Claims 13, 31 and 40. Unless all the elements are taught by the references, there can be no success in modifying them.

Thus, at the time the present invention was made, neither of the cited references teach or describe *all* of the limitations claimed by Applicant in independent Claims 13, 31 and 40. It would therefore not have been obvious to one of ordinary skill in the art to provide a flexible body structure having an interfacing surface upon which one or more distribution channels for distributing both resin and vacuum are formed and extend thereacross. It would also not have been obvious to form the flexible body structure by spraying a polyurea, polyurethane, or polyurea/polyurethane onto a pattern. Accordingly, independent Claims 13, 31 and 40 and the claims depending therefrom are nonobvious under § 103(a).

III. Conclusion

Applicant respectfully submits the claims are in condition for formal allowance which is courteously solicited. If any issue regarding the allowability of any of the pending claims in the present application could be readily resolved, or if other action could be taken to further advance this application such as an Examiner's amendment, or if the Examiner should have any questions regarding the present amendment, it is respectfully requested that the Examiner please telephone Applicant's undersigned attorney in this regard. The Examiner's attention is also drawn to the proper correspondence address shown below. Should any fees be necessitated by this response, the Commissioner is hereby authorized to deduct such fees from Deposit Account No. 11-0160.

Respectfully submitted,

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